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The first record of *Pyrgus malvoides* (Elwes & Edwards, 1897) in the Czech Republic (Lepidoptera, Hesperiidae): an accidental introduction?

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Abstract. The Mediterranean skipper, *Pyrgus malvoides* (Elwes & Edwards 1897), is newly recorded for the Czech Republic, some 400 km away from its nearest known population. The specimen was collected in June 1993 in Hejná, Bohemia and was discovered in the collection of Oldřich Jakeš during a revision of other *Pyrgus* species. The presence of this species elsewhere in the region could not be established and the best current explanation for this record is that it was an accidental introduction.

Introduction

In recent decades, only a few new butterfly species have been recorded in the fauna of the Czech Republic. For example, in the last ten years *Pyrgus trebevicensis* (Warren, 1926) (Beneš et al. 2001; Hanč 2011) and *Spialia orbifer* (Hübner, 1823) (Šumpich 2011) (both Hesperiidae) were recorded for the first time in the Czech Republic, and just two additional species were discovered during the last 20 years: *Leptidea reali* Reissinger, 1989 (Pieridae) and *Hyponephele lupinus* (Costa, 1836) (Nymphalidae); the first one very abundant and the latter already extinct, discovered as a museum specimen (Králíček and Povolný 1992; Laštůvka et al. 1995).

During a revision of skippers belonging to the genus *Pyrgus* (Hübner, 1819), an unusual specimen was found in the collection of Oldřich Jakeš with the collecting data: CZ – Bohemia, Hejná, 1.vi.1993, Jakeš, O. lgt. (see Fig. 1). This locality is in the foothills of Šumava Mts. near the town of Sušice (49°17'13"N, 13°40'18"E); it is covered by supramontane xeric vegetation on limestone, and is part of the Pučanka Nature Reserve.

It was immediately noticed that this male specimen was unusually large and had different colouration from the common *Pyrgus malvae* (Linnaeus, 1758), which is known to occur in the region. The wingspan of this specimen is 16 mm, which is about three millimetres greater than the 11–13 mm wingspan described by Slamka (2004) for *P. malvae*, and it has a light brown colour (Figs 2, 3), which is atypical for *P. malvae* in the Czech Republic. After this discovery, the first author decided to examine more material from across the Czech Republic. The results

of this investigation, presented below, led us to conclude that this unusual specimen is actually *P. malvoides* (Elwes & Edwards 1897).

Methods

The examined collections are listed below. All material is from the Czech Republic. The first author focused on the determination of different specimens of *P. malvae* from the region, studying 13 specimens from 6 localities near the foothills of Šumava Mts, and then the first author examined more material from other localities in the Czech Republic to attempt to find another specimen of *P. malvoides*. In addition to the examination of external characters, all genitalia were dissected and determined by the first author (det. V. Hula).

Abbreviations

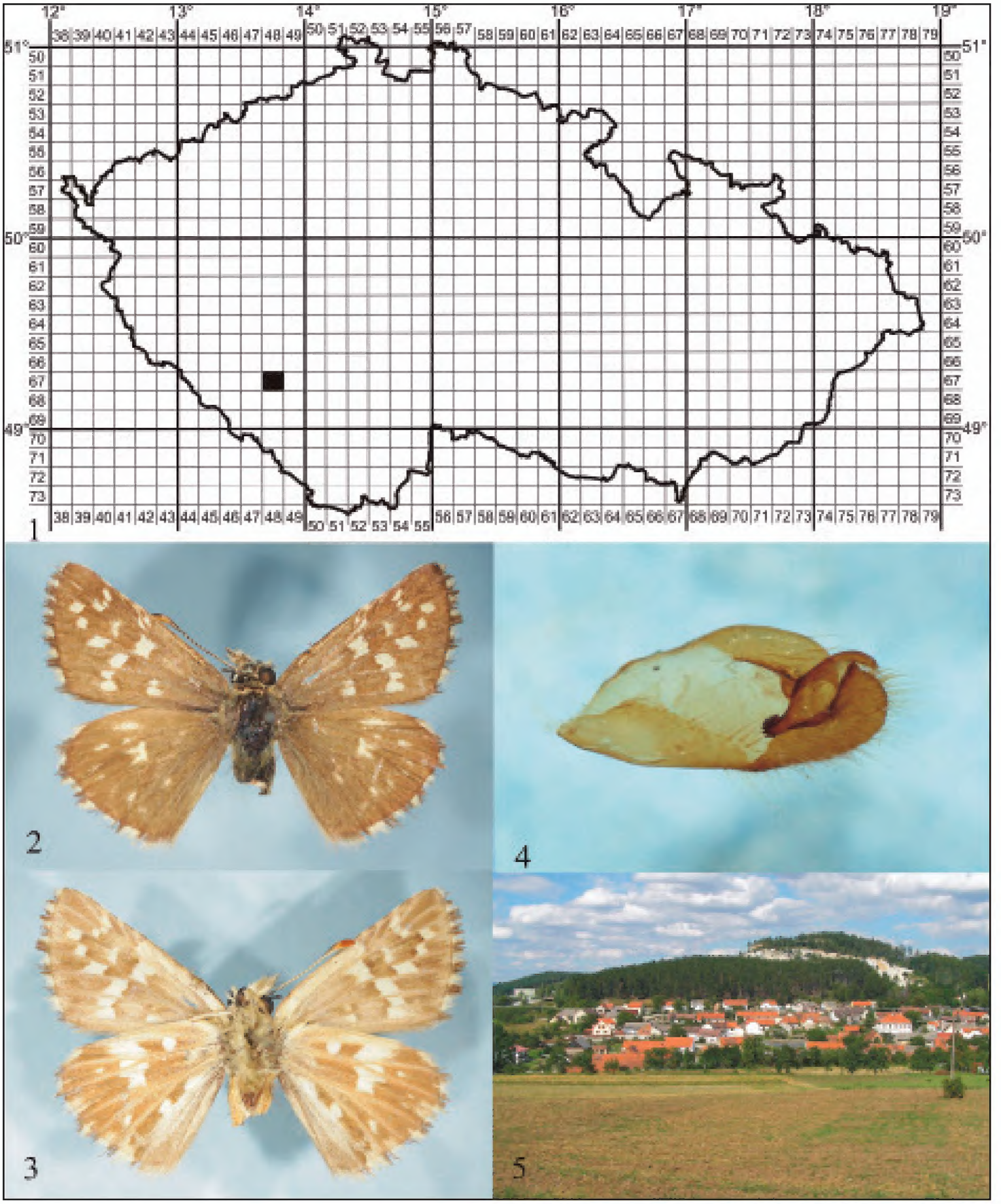
Collections

AP	Alois Pavlíčko, private collection, in Prachatice, Czech Republic
MM	Miroslav Mikát, private collection, in Hradec Králové, Czech Republic
MZMB	Moravian museum Brno, in Brno, Czech Republic
OJ	Oldřich Jakeš, private collection, in Brno, Czech Republic
PS	Pavel Skala, private collection, in Praha, Czech Republic
RMM	Regional museum Mikulov, in Mikulov, Czech Republic
VCMHK	East-bohemian museum Hradec Králové, in Hradec Králové, Czech Republic
VCMP	East-bohemian museum Pardubice, in Pardubice, Czech Republic
VH	Vladimír Hula, private collection, in Brno, Czech Republic
ZCMP	West-bohemian museum Pilsen, in Pilsen, Czech Republic
ZFF	Zdeněk Faltýnek Fric, Institute of Entomology, in České Budějovice, Czech Republic
ZN	Zdeněk Navrátil, private collection, in Brno, Czech Republic

Other abbreviations

NPR	National nature reserve
PP	Nature monument
PR	Nature reserve

Material examined. Bohemia: Rakovník – Papírna, 4.vi.1991 (1 ex), leg., det. et coll. VH. PR Niva u Ždírce nad Doubravou, 28.v.2003 (2 ex), leg., det. et coll. VH. Bražec, 7.vi.2002 (1 ex), leg., det. et coll. VH. Kramolín - Podhora, 20.vi.2003 (1 ex), leg., det. et coll. VH. Plzeň, 28.iv.1957 (2 ex), 9.v.1946 (1 ex.), 25.iv.1966 (1 ex), 27.iv.1966 (1 ex.), leg. Vl. Skala, coll. ZCMP; 23.iv.1960 (1 ex), leg. Fraj, coll. ZCMP; Dub. vrch, 9.v.1955 (1 ex), 14.iv.1946 (2 ex), leg. Vl. Skala, coll. ZCMP. Dobřany, Břez. vrch, 20.v.1956 (1 ex), leg. Vl. Skala, coll. ZCMP; 28.v.1956 (1 ex), leg. Vl. Skala, coll. ZCMP. Chlístov, 6.vi.1954 (1 ex), leg. Vl. Skala, coll. ZCMP; Jarov, 22.v.1925 (1 ex), coll. ZCMP; Vladař, 1908 (1 ex), coll. ZCMP; NPR Vyšenské kopce, 20.vi.2001 (1 ex), leg. et coll. ZFF; Hředle, 27.v.1995 (1 ex), leg. et coll. ZFF; Hlinky, 19.vi.1994 (1 ex), leg. J. Franz, coll. VH; Police nad Metují, 9.iv.1944 (1 ex), leg. G. Petr, coll. VCMHK; Srbsko, 21.v.1961 (1 ex), 9.v.1962 (1 ex) coll. VCMHK; Číhaná, 22.v.1971 (1 ex), 9.vi.1972 (1 ex), leg. J. Franz, coll. VH; Nové Kounice, 30.v.1992 (1 ex), leg. J. Franz, coll. VH; Rybničná, 28.iv.1996 (1 ex), 29.v.1991 (1 ex), 31.v.1991 (1 ex), leg. J. Franz, coll. VH; Javorná, 3.vi.1972 (1 ex), leg. J. Franz, coll. VH; Pila, 27.vi.1991 (1 ex), leg. et coll. VH; Horní Tašovice, 31.v.1972 (1 ex), leg. Franz J., coll. VH; Teplička, 14.v.1992 (1 ex), leg. Franz J., coll. VH; Německý Chloumek, 9.vi.1972 (1 ex), leg. Franz J., coll. VH; Česká Třebová, 20.v.1964 (1 ex), leg. Široký L., coll. VCMHK; PP Báň, Hradčany, 1.v.2001 (1 ex), leg. et coll. MM; PP Na Plachtě, Hradec Králové, 15.v.2001 (1 ex), 25.v.2002 (1 ex), leg. et coll. MM; Vysoká and Labem, 8.v.1976 (1 ex), leg. et coll. MM; Slezia, Těšín, 18.v.1930 (1 ex), coll. VCMHK; Oblík, 2.v.1987 (1 ex), leg. Pacl, coll. VCMHK; Prachatice, 18.v.1982 (1 ex), 27.v.1978 (1 ex), 20.vi.1978 (1 ex), 26.iv.1981 (1 ex), 29.iii.1980 (1 ex), 10.vii.1977 (1 ex), leg. et coll. AP; Setuň, Prachatice, 24.v.1985



Figures 1–5. 1. Grid square map of the Czech Republic with marked square of record of *Pyrgus malvoides* (Elwes & Edwards, 1897). **2–3.** The collected specimen *Pyrgus malvoides*, CZ – Bohemia, Hejná, 1.vi.1993, Jakeš, O. lgt. et coll., Hula, V. det. **4.** Male genitalia (valva, lateral view) of collected specimen *P. malvoides*. **5.** General view from the collecting locality of limestone quarry.

(1 ex), leg. et coll. AP; Irů Dvůr, Prachatice, 9.v.1986 (1 ex), leg. et coll. AP; Lípa, Prachatice, 10.vii.1977 (1 ex), leg. et coll. AP; Kunětická hora - Ráby, 9.v.1994 (1 ex), leg. J. Macourek, coll. VCMP; Střížovický vrch, Ústí nad Labem, 8.v.2002 (2 ex), leg. et coll. VH; PR Pučanka, Hejná, 1.iv.1993 (1 ex), leg. OJ, coll. VH; Klíčava, (1 ex), leg. Dr. Vl. Vala, coll. RMM. **Moravia**: Filipovské údolí, 5.vi.1951 (1 ex), leg. Dr. Vl. Vala, coll. RMM; Lideřovice, 11.v.1950

(2 ex), leg. Dr. Vl. Vala, coll. RMM; Luhačovice, 20.v.1946 (1 ex), 13.v.1951 (1ex), leg. Dr. Vl. Vala, coll. RMM; Uherské Hradiště, 9.v.1949 (1 ex), leg. Dr. Vl. Vala, coll. RMM; Křiščanovice, 13.v.1947 (1 ex), leg. Dr. Vl. Vala, coll. RMM; Břeclav, 13.viii.1979 (1 ex), leg. E. Sandtner, coll. RMM; Valtice, 28.iv.1968 (1 ex), 10.v.1975 (1 ex), leg. E. Sandtner, coll. RMM; Milovice, 18.vii.1962 (1 ex), leg. Minařík, coll. RMM; NPR Malhotky, 25.vi.2004 (1 ex), leg., det. et coll. VH; Moravský Krumlov, 3.vi.1944 (1 ex), coll. MZMB; Senorady, 29.v.1935 (1 ex), leg. Lemberk, coll. MZMB; Habrůvka, 26.v.1982 (1 ex), leg. Kotlán and Vepřek, coll. MZMB; Hády, 1962-1982 (1 ex), leg. Kotlán and Vepřek, coll. MZMB; Macošská Stráň, 4.vi.1994 (1 ex), leg. et coll. PS; Brno - Medlánky, 30.iv.1994 (1 ex), leg. J. Macourek, coll. VCMP; 15.v.1983 (1 ex), leg. R. Čech, coll. ZN. Macošská Stráň, 20.vi.1995 (1 ex), leg. J. Macourek, coll. VCMP; Želešice, 30.v.1991 (1 ex), leg. J. Macourek, coll. VCMP; Perná, CHKO Pálava, 9.vi.2006 (1 ex), leg. et coll. OJ; Mohelno, 29.v.1977 (1 ex), leg. et coll. ZN; Kamenný vrch, Brno, 6.v.1979 (3 ex), leg. et coll. ZN; Soběšice, 11.v.1977 (1 ex), leg. et coll. ZN; Radějov, 25.iv.1948 (4 ex), 26.vi.1954 (1 ex), leg. Dr. Vl. Vala, coll. RMM.

Results and discussion

Twelve collections from 58 sites in the Czech Republic were studied. This included 88 specimens of *P. malvae* from a wide range of territories in the Czech Republic, and even one specimen of *P. malvae* from the same locality as the *P. malvoides* was found. A thorough search uncovered no other specimens of *P. malvoides*.

Pyrgus malvoides is a typical west-Mediterranean species with its distribution ending in Slovenia, Italy, westernmost Austria, Liechtenstein, Switzerland and France (Kaufmann 1955; Aistleiner 1996; Lepidopterologen Arbeitsgruppe 1997; Karsholt & Nieukerken 2011). Some authors consider the taxon *P. malvoides* only as a subspecies of *P. malvae* (see Tolman & Lewington 1997; Kudrna et al. 2011). These taxa are able to hybridize on the border of their distribution (Guillaumin 1962, 1971) and the hybrids show characters of both species (Albeti 1956). De Jong (1972, 1987) studied the whole complex of species in the *P. malvae* group and summarised the distribution of all species, specific characters and morphological phylogeny of the group. In this work clear morphological differences in male and female genitalia can be found. The specimen of *P. malvoides* that we discovered in the collection of Oldřich Jakeš has no marks of hybridisation (Fig. 4).

The origin of the specimen is unclear. All available material of *P. malvae* from the region (the foothills of Šumava Mts., the mainly limestone regions and some other places across the whole Czech Republic) was investigated. It is very unlikely that undiscovered populations exist because the butterfly fauna of the Czech Republic has been very well investigated (Beneš and Konvička 2002). It is also unlikely that *P. malvoides* had flown in from the nearest population, which is about 400 kilometres distant.

It is likely that this specimen of *P. malvoides* was accidentally introduced into the locality. There are several possibilities, but the most probable seems to be the introduction by mining techniques, as the locality is in the vicinity of a very large limestone quarry (Fig. 5) owned by the French company Lafarge. Nevertheless, it is an interesting record of this species in Central Europe, and illustrates the importance of paying close attention even to species as common as *Pyrgus malvae*.

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